

Impact Craters

Problem: How does the size and speed of a meteorite affect the depth and diameter of the resulting crater?

Hypothesis: (complete as a group BEFORE starting the lab)

Materials:

1 large aluminum pan
2 objects to drop
Flour to fill pan to depth of 2 inches
Calipers
Meter stick
Metric ruler
Balance or Scale
Tongue depressor
Index card
Large Plastic Container (to tamp flour)

Procedure:

1. Collect all required materials to complete the lab. Find mass and diameter of 2 objects and record on table.
2. Assign a job to each group member – meter stick holder, dropper, measurer, and recorder (adjust for group size).
3. Drop object #1 from a height of 20cm into the container of flour.
4. Measure the resulting crater's diameter using the calipers. For all measurements, record your results in centimeters to the nearest tenth.
5. Carefully remove the object so as not to destroy the crater and measure the depth of the crater by marking the index card and measuring. Record your results.
6. Repeat for Trial #2 with the same object from the same height in an undisturbed part of the flour. Measure depth and diameter. Record your results.
7. Repeat Step #6 for Trial #3 (same height).
8. Repeat steps 3-7 for varying heights as well as for object #2. Record measurements on the "Data Table"
9. Cleanup any debris thrown out of the container and wipe down the lab area using a damp sponge or paper towel. Leave your lab station cleaner than you found it.

Operational Definition: (Complete as a group! (Remember, it's literally HOW you are measuring the variables! What variable? What instrument? What unit?))

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Data: Table will be provided for you to complete

On graph paper: You will be making 1 graph (4 lines) to display all the data. On the graph you will make the "X" axis "Drop Height" and the "Y" axis "Centimeters". You will plot your AVERAGES ONLY for depth and diameter. You will also need to show the difference between your 2 objects. Your "Depth" graph should be one color and your "Diameter" graph should be a different color. A key should be made to tell the reader which line represents which set of data.

Conclusion: To be completed in computer lab.